

[54] **ANTI-HYPERTENSIVE COMPOSITIONS OF SECONDARY AMINE-NITRIC OXIDE ADDUCTS AND USE THEREOF**

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[58] Field of Search **514/611, 149, 558, 563, 514/564, 610, 645, 579**

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,153,094 10/1984 Reilly 260/576

OTHER PUBLICATIONS

Palmer, Nature 327, 524-526, 1987.

Kruszyna et al. Toxicol. and Applied Pharmacol. 91, 429-438, 1987.

Ignarro, The FASEB Journal 3, 31-36, 1989.

Ignarro et al., J. Pharmacol. & Exper. Therapeutics 218(2), 739-749, 1981.

Drago, "Free Radicals in Inorganic Chemistry", No.

36, Advances in Chemistry Series, Amer. Chem. Soc., Wash. DC, 1962, pp. 143-149.

Drago et al., J. Amer. Chem. Soc. 83, 1819-1822, 1961.

Deluca et al., "Pharmaceutics and Pharmacy Practice" J.B. Lippincott Co., Philadelphia, 1982, 238-250.

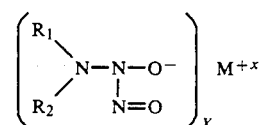
Trissel, ASHP, "Handbook on Injectable Drugs" 4th ed; 622-630, 1986.

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[57] ABSTRACT

This invention concerns anti-hypertensive compositions and a method of lowering blood pressure in mammals. The active component of the compositions is a compound of the formula:



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wherein R_1 and R_2 are independently chosen from straight chain and branched chain C_1 - C_{12} alkyl groups and benzyl, with the proviso that no branch occur on the alpha carbon atom of the alkyl groups; or R_1 and R_2 together with the nitrogen atom they are bonded to form a pyrrolidino, piperidino, piperazino or morpholino group, M^{+} is a pharmaceutically acceptable cation, wherein X is the valence of the cation.

14 Claims, No Drawings